

### **REMARKS**

In view of the above amendment, applicants believe the pending application is in condition for allowance.

#### **Claim Rejections – 35 USC § 112, Second Paragraph**

The Examiner has rejected Claims 1-14, 16, 17, and 24-27 of the present application under 35 USC 112, second paragraph, contending that the claims are indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to Claims 25 and 26, the Examiner contends the claims are indefinite because they depend from cancelled claims. To obviate the rejection and correct an obvious error, applicants are amending Claims 25 and 26 to depend from Claim 24.

With regard to Claim 27, the Examiner contends that the phrase “composition of into” is not understandable. To obviate the rejection and correct an obvious error, applicants are amending Claim 27 to delete the term “of” from the offending phrase.

With regard to Claims 1, 14, 16, 17, 24, and 26 (and apparently the claims that depend from Claims 1 and 24), the Examiner contends that the intended scope of “nominal” is indefinite. The applicants respectfully traverse.

The combination of a free-radical crosslinkable polymer and a free-radical inducing species (such as an organic peroxide) adhere to a crosslinking temperature profile based upon the selection of the polymer and the free-radical inducing species. A person skilled in the art manages the profile to prevent or minimize premature scorching of the polymer during the mixing and melting of the polymer and to ensure the desired level of crosslinking at the crosslinking temperature of the free-radical inducing species. The balance of the mixing and melting against premature scorching occurs within a nominal profile as determinable by persons skilled in the art. Higher temperatures are desirable to achieving mixing and melting but lower temperatures and longer residence times are required to prevent premature scorching.

A person skilled in the art can determine the nominal crosslinking temperature profile of a free-radical crosslinkable polymer and a free-radical inducing species. The profile is comprised of a nominal melt processing temperature portion, a nominal transitional temperature portion, and a nominal crosslinking temperature portion. The cited references of US2005/0192419 (Debaud I) and US2004/0195550 (Debaud II) highlight an understanding of

the nominal crosslinking temperature profile and demonstrate a selection of suitable nominal temperatures. In both references, the applicants measure scorch at a nominal melt processing temperature of 145 degrees Celsius and maximum torque (as a characteristic of ultimate cure) at the nominal crosslinking temperature of 180 degrees Celsius for the free-radical crosslinkable polymer (a low density polyethylene) and a free-radical inducing species (dicumyl peroxide). In each cited reference, the applicants seek to minimize premature scorching of the low density polyethylene at 145 degrees Celsius.

The present applicants believe that their applications sufficiently teaches the term “nominal” and that the cited references demonstrate an appreciation of the nominal characteristics of a combination of a free-radical crosslinkable polymer and a free-radical inducing species. As such, the applicants believe that Claims 1, 14, 16, 17, 24, and 26 and their dependent claims comply with 35 USC 112, second paragraph, and respectfully request the Examiner to withdraw the rejection.

#### **Claim Rejections – 35 USC § 102(e)**

The Examiner has rejected Claims 1-9, 11, 14, 16, 17, and 24-26 of the present application under 35 USC 102(e) as being anticipated by US20050192419 (Debaud I). The applicants respectfully traverse.

The cited reference teaches the use of a hindered amine-derived stable organic free radical to increase the scorch time of a free-radical crosslinkable polymer in the presence of an organic peroxide at a nominal melt processing temperature. As Table 1 of Debaud I demonstrates, the scorch time of compositions with and without the hindered amine-derived stable organic free radical is measured at 145 degrees Celsius. The compositions with the hindered amine-derived stable organic free radical demonstrated a longer scorch time.

The present invention goes beyond the teaching of Debaud I. The present invention teaches that the melt processing temperature of the composition can be increased above the nominal temperature. It teaches that a person skilled in the art can improve the melt processing of the polymer by processing it at a higher temperature. It teaches that polymers previously excluded because of their melt processing characteristics can now be used. Notably, a polymer that required a higher melting temperature is now accessible. Debaud I demonstrates no appreciation for modifying the temperature profile of the combination of polymer and free-radical inducing species by increasing the melting temperature.

Similarly, Debaud I demonstrates no appreciation that increasing the melting temperature decreases the size of the transition from mixing to crosslinking based on temperature. This teaching is phenomenal. For example, it allows a person skilled in the art to increase the rate of melt processing and crosslinking free-radical crosslinkable polymers. In other words, the present invention teaches a person skilled in the art how to run polymers hotter and cure them faster.

The Examiner has rejected Claims 1-9, 11, 12, 14, 16, 17, and 24-26 of the present application under 35 USC 102(e) as being anticipated by US20040195550 (Debaud II). The applicants respectfully traverse.

Like Debaud I, the cited reference teaches the use of a hindered amine-derived stable organic free radical to increase the scorch time of a free-radical crosslinkable polymer in the presence of an organic peroxide at a nominal melt processing temperature. As Table 1 of Debaud I demonstrates, the scorch time of compositions with and without the hindered amine-derived stable organic free radical is measured at 145 degrees Celsius. The compositions with the hindered amine-derived stable organic free radical demonstrated a longer scorch time.

Debaud II further teaches the use of promoter containing a least one double bond to facilitate a higher degree of cure of the polymer. Notably, the use of the stable organic free radical adversely affected the degree of cure in the polymer. The promoter was added to compensate for the adverse effect.

But, as with Debaud I, the present invention goes beyond the teaching of Debaud II. The present invention teaches that the melt processing temperature of the composition can be increased above the nominal temperature. It teaches that a person skilled in the art can improve the melt processing of the polymer by processing it at a higher temperature. Debaud II demonstrates no appreciation for modifying the temperature profile of the combination of polymer and free-radical inducing species by increasing the melting temperature.

Similarly, Debaud II demonstrates no appreciation that increasing the melting temperature decreases the size of the transition from mixing to crosslinking based on temperature. In other words, the present invention teaches a person skilled in the art how to run polymers hotter and cure them faster. With the use of cure promoters, the present application demonstrates that running polymers hotter and curing them faster need not result in the sacrifice of ultimate cure.

In view of the above-described Amendments and Remarks, the applicants believe the pending application is in condition for allowance.

Dated: January 4, 2008

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